Countering Service Information Challenges in the Internet of Services

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Abstract
Business Webs apply the idea of value networks to the WWW. The underlying delivery platform is commonly referred to as the Internet of Services and will certainly have to deal with a great variety and amount of information about services along several service information dimensions. As soon as brokerage, discovery, or community feedback parts are decentralized, there emerge a number of service information challenges (modeling the information in a holistic way, documentation, interlinkage, tool interoperability, distributed querying, inconsistent information, and cooperation of different stakeholders). In this paper, we propose to counter such service information challenges by two artifacts. First, we contribute a Service Ontology based on a sound and rigid foundational ontology. The Service Ontology provides a holistic and consistent way of capturing service information. We apply the recommendations of the W3C Semantic Web Activity whose recent standardization has already opened new possibilities for tool interoperability, interlinkage of information, and distributed querying on the web. However, building and prescribing an ontology in standardized languages is not enough to address all service information challenges. Therefore, as a second contribution, we provide a method around the ontology including a governance framework, guidelines for applying the W3C Semantic Web recommendations, a lifecycle-spanning tool chain, and different levels of applicability. We label our method Semantic Business Web approach, since we build on W3C Semantic Web standards, use and extend them in the Business Web setting. Both artifacts are constructed in an interdisciplinary way by experts participating in the German lighthouse project THESEUS/TEXO. The project's scenario also serves as a proof of concept evaluation of the artifacts.

Keywords
Internet of services – Business web – Semantic web – Service ontology – Service governance framework

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